

Volume I, Appendix C

Best Practices for Voting Officials

The VSS-2002 contained requirements only for voting systems and for testing entities. However, requirements for the new sections of the VVSG, including human factors, wireless communications, VVPAT, software distribution and setup validation, depend not only on voting systems providing specific capabilities but on voting officials developing and carrying out appropriate procedures. Consequently, the VVSG Version 1 contains Best Practices for voting officials. Voting officials can use this to develop and incorporate appropriate procedures to help ensure that their voting systems are reliable, accessible, usable, and secure. Furthermore, this guidance may be used in training and incorporated into written procedures for properly conducting the election and operating voting systems.

This section is not a complete list of best practices for voting officials. It only reflects items specifically called out in the VVSG. Future versions will be more comprehensive and will better reflect the key role that voting officials have in operating, maintaining, setting up, validating, storing, and otherwise managing voting systems to achieve successful elections.

2.2.7.1.1.1 When the provision of accessibility involves an alternative format for ballot presentation, then all the other information presented to voters in the case of non-disabled English-literate voters (including instructions, warnings, messages, and ballot choices) shall also be presented in that alternative format.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: This is a general principle to be followed for any alternative format presentation. Two particular cases, 1) audio formats and 2) non-English formats, are the subject of specific requirements in later sections.

2.2.7.1.1.3 When the primary means of voter identification or authentication uses biometric measures that require a voter to possess particular biological characteristics, the voting process shall provide a secondary means that does not depend on those characteristics.

Responsible Entity: voting system vendor, voting official
Process: voting

Discussion: For example, if fingerprints were used for identification, there would have to be another mechanism for voters without usable fingerprints.

2.2.7.1.1.4 Polling places shall conform to the appropriate guidelines of the Americans with Disabilities Act (ADA) of 1990 and of the Architectural Barriers Act (ABA) of 1968.

Responsible Entity: voting officials
Process: pre-voting/voting

Discussion: This requirement does not stem from HAVA, but rather is a reminder of other legal obligations. For more details, see <http://www.access-board.gov/ada-aba.htm> and <http://www.usdoj.gov/crt/ada/votingck.htm>.

2.2.7.1.2.2.3.4 A sanitized headphone or handset shall be made available to each voter.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: This requirement can be achieved in various ways, including the use of "throwaway" headphones, or of sanitary coverings.

2.2.7.1.2.2.5 If the normal procedure is for voters to submit their own ballots, then the voting process should provide features that enable voters who are blind to perform this submission.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: For example, if voters normally feed their own optiscan ballots into a reader, blind voters should also be able to do so.

2.2.7.1.4.1.1 The AVS shall provide a clear floor space of 30 inches (762 mm) minimum by 48 inches (1219 mm) minimum for a stationary mobility aid. The clear floor space shall be level with no slope exceeding 1:48 and positioned for a forward approach or a parallel approach.

Responsible Entity: voting system vendor, voting officials
Process: pre-voting/voting

2.2.7.1.4.2 All controls, keys, audio jacks and any other part of the AVS necessary for the voter to operate the voting system shall be within the reach regions as specified under the following sub-requirements.

Responsible Entity: voting system vendor, voting officials
Process: pre-voting/voting

Discussion: All dimensions are given in inches. To convert to centimeters, multiply by 2.54. Note that these sub-requirements have meaningful application mainly to

controls in a fixed location. A hand-held tethered control panel is another acceptable way of providing reachable controls. All the sub-requirements inherit the "responsible entity" and "process" properties.

2.2.7.1.4.2.4.1 The side obstruction shall be no greater than 24 inches in depth and its top no higher than 34 inches.

Responsible Entity: voting system vendor, voting officials

2.2.7.1.4.2.5 All labels, displays, controls, keys, audio jacks and any other part of the AVS necessary for the voter to operate the voting system shall be easily legible and visible to a voter in a wheelchair with normal eyesight (no worse than 20/40, corrected) who is in an appropriate position and orientation with respect to the AVS.

Responsible Entity: voting system vendor, voting officials

Process: pre-voting/voting

Discussion: There are a number of factors that could make relevant parts of the AVS difficult to see: small lettering, controls and labels tilted at an awkward angle from the voter's viewpoint, glare from overhead lighting, etc.

2.2.7.1.5.1.1 The AVS shall incorporate the features listed under requirement #2.2.7.1.2.2.3 (audio presentation) to provide accessibility to voters with hearing disabilities.

Responsible Entity: voting system vendor, voting officials

Process: voting

Discussion: Note especially the requirements for volume initialization and control.

2.2.7.1.7 The voting process shall be accessible to voters with cognitive disabilities.

Responsible Entity: voting system vendors, voting officials

Process: voting

Discussion: At present there are no design features specifically aimed at helping those with cognitive disabilities. Clause 1.2.1.9, the synchronization of audio with the screen in a DRE is helpful for some cognitive disabilities such as dyslexia.

2.2.7.2.2 Regardless of the language, candidate names shall be displayed or pronounced in English on all ballots. For written languages that do not use Roman characters (e.g. Chinese, Japanese, Korean, Arabic), the ballot shall include transliteration of candidate names into the relevant language.

Responsible Entity: voting system vendor, voting officials

Process: voting

2.2.7.3.2.1 As mandated by HAVA 301 (a)(1)(A), the voting process shall allow the voter to review his or her completed ballot before final submission in order to verify that it correctly represents the intended vote. Further, the process shall provide a means by which the voter can correct the ballot if mistakes are detected.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Note that this review and correction may be achieved by procedural means (e.g. in the case of paper ballots), as well as technical. This requirement is a brief paraphrase of the HAVA language but of course the statutory language is determinative.

2.2.7.3.2.2 As mandated by HAVA 301 (a)(1)(A), the voting process shall notify the voter if he or she has attempted to vote for more candidates than the maximum permitted in a given race and shall provide the voter with the opportunity to correct the ballot before final submission.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Note that this notification and correction may be achieved by procedural means (e.g. in the case of paper ballots), as well as technical. This requirement is a brief paraphrase of the HAVA language but of course the statutory language is determinative.

2.2.7.3.2.4 The voting process shall notify the voter if he or she has attempted to vote for fewer candidates than the maximum permitted in a given race and provide the voter with the opportunity to change the ballot before final submission. The process shall also notify the voter that such an "undervote" is permitted and shall accept a ballot if the voter so chooses.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Note that this notification and correction may be achieved by procedural means (e.g. in the case of paper ballots), as well as technical.

2.2.7.3.3.1 Consistent with election law, the voting process shall not introduce any bias for or against any of the choices to be made by the voter. In both visual and aural formats, candidates and choices shall be presented in an equivalent manner.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Certain differences in presentation are unavoidable, such as the order in which candidates are listed, and write-in candidates are inherently more difficult to vote for. But comparable characteristics such as font size or voice volume and speed must be the same for all choices.

2.2.7.3.3.2.1 Voters should have access to sample ballots and all relevant instructions before the voting session.

Responsible Entity: voting officials
Process: pre-voting

2.2.7.3.3.2.2 Voters should have an opportunity to practice voting before the actual voting session, especially for DRE systems.

Responsible Entity: voting officials
Process: pre-voting

Discussion: For example, web-based support can provide access to ballot information and instructions for operating the voting station. Practice material and equipment may also be provided at the polling place.

2.2.7.3.3.3.2 The voting process shall provide human assistance if requested by the voter.

Responsible Entity: voting officials
Process: voting

Discussion: The voter should always be able to get help from a poll worker if desired.

2.2.7.3.3.4.1 The voting station should not visually present a single race spread over two pages or two columns.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Such a visual separation poses the risk that the voter will perceive the race as two races. Of course, if a race has a very large number of candidates, it may be infeasible to observe this guideline.

2.2.7.4.1.1 The ballot and any input controls shall be visible only to the voter during the voting session and ballot submission.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Voting officials should take into account such factors as visual barriers, windows, permitted waiting areas for other voters, and procedures for ballot

submission when not performed at the voting station, e.g. submission of optiscan ballots to a central reader.

2.2.7.4.1.2 The audio interface shall be audible only to the voter.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: Voters who are hard of hearing but need to use an audio interface may also need to increase the volume of the audio. Such situations require headphones with low sound leakage.

2.2.7.4.1.3 As mandated by HAVA 301 (a)(1)(C), the voting system shall notify the voter of an attempted overvote in a way that preserves the privacy of the voter and the confidentiality of the ballot.

Responsible Entity: voting system vendor, voting officials
Process: voting

Discussion: This requirement is a brief paraphrase of the HAVA language but of course the statutory language is determinative.

2.2.7.4.3 The procedures for absentee balloting shall enable the voter to preserve privacy.

Responsible Entity: voting officials
Process: voting

Discussion: There is no practical means to prevent a voter from revealing an absentee paper ballot to others. But the procedures should ensure that if a voter chooses to maintain privacy, it is not violated at a later stage, in particular when the ballot is received by voting officials.

6.0.2.4.3 In case of conditions that prevent voter review of the paper record, there shall be a means for the voter to notify an election official.

Responsible Entity: voting Official
Process: voting

6.0.2.4.4 Procedures by which election officials can be notified and prescribed actions that can be taken to address discrepancies if a voter indicates that the electronic and paper records do not match shall be documented.

Responsible Entity: voting system vendor, voting official
Process: voting

Discussion: If the records do not match, a potentially serious error has occurred. Election officials must first verify that the records do not match and then take appropriate actions such as removing the voting station from service and quarantining its records for later analysis.

6.0.2.5.3 The privacy and anonymity of voters whose paper records contain any of the alternative languages chosen for making ballot selections shall be maintained.

Responsible Entity: voting system vendor, voting official
Process: voting

Discussion: One method for accomplishing this is to ensure that no less than five voters use any of the alternative languages for their ballot selections.

6.0.2.5.4 The voter shall not be able to leave the voting area with the paper record if the information on the paper record can reveal the voter's choices.

Responsible Entity: voting system, Voting Official
Process: voting

6.0.2.7.1 The voting station shall be physically secure from tampering, including intentional damage.

Responsible Entity: voting system vendor, voting official
Process: voting

6.0.2.7.2.5 There shall be adequate supplies of consumable items such as paper and printer ink on hand to operate from opening to closing of polls.

Responsible Entity: voting officials
Process: voting

6.0.3.2.4.1 The voting official shall ensure that the wireless capabilities are active only when needed.

Responsible Entity: voting official
Process: pre-voting, voting, post-voting

6.0.3.2.6.1 To reduce the potential for unintended interference, the wireless communications (radio frequencies) chosen for use in a voting system should not use radio frequencies that are widely used for non-voting systems devices that may be present in or near the expected place (e.g., polling place) of wireless usage.

Responsible Entity: voting official
Process: pre-voting, voting, post-voting.

6.0.3.2.6.3 A radio emissions site test should be conducted at any location (e.g., polling place) where the wireless voting system is to be used to determine the current level of interference, as well as to determine the projected level of the voting system(s) wireless emissions.

Responsible Entity: voting official
Process: pre-voting, voting, post-voting

Discussion: The test would need to occur at times near each planned wireless usage, since the availability and usage of wireless communications in non-voting systems change quickly. This radio emissions site test may be used to determine other nearby wireless non-voting systems that could potentially interfere with the voting system.

6.0.3.4.1 All information transmitted via wireless communications shall be encrypted, with the exception of wireless coupling, to protect against eavesdropping and data manipulation including modification, insertion, and deletion.

Responsible Entity: voting system vender, voting official
Process: pre-voting, voting, post-voting

6.0.3.4.1.1 The encryption shall be as defined in Federal Information Processing Standards (FIPS) 197, “Advanced Encryption Standard (AES)”.

Responsible Entity: voting system vender, voting official
Process: pre-voting, voting, post-voting

6.0.3.4.1.1.1 The cryptographic modules used shall comply with FIPS 140-2, Security requirements for Cryptographic Modules.

Responsible Entity: voting system vender, voting official, testing entity
Process: pre-voting

6.0.3.5.4 The wireless (audible) path shall be protected or shielded.

Responsible Entity: voting system vender, voting official
Process: voting

Discussion: Protecting the audible path is a trade off between the high volume level from a speaker necessary for an individual to hear with the low volume level necessary to keep others from hearing, as well as protecting from interference (i.e., noise) from the polling place, voting station, or voting environment. The same is true for the audible path if a voter’s speech is to be captured by the voting device. This wireless communication’s path protection is necessary to protect privacy. Some audio head sets may already satisfy this requirement for the hearing part, while a

sound proof voting booth may be necessary in some other cases (e.g., voice recordings).

6.0.3.6.4 All wireless communications actions shall be logged.

Responsible Entity: voting system vender, voting official
Process: pre-voting, voting, post-voting

Discussion: As a way of monitoring the wireless communications a log of important information is maintained. This is to ensure that the wireless communications is only used by authorized users with authorized devices to authorized access to authorized services, or at least see when it was not. This relates to the system audit requirements (See. Volume I, section 2.2.5) and integrity (See Volume I, section 2.2.4), if wireless is used.

6.0.3.6.4.1 The log shall contain at least the following entries. – times wireless activated and deactivated, services accessed, identification of device to which data was transmitted to or received from, identification of authorized user, successful and unsuccessful attempts to access wireless communications or service.

Responsible Entity: voting system vender, voting official
Process: pre-voting, voting, post-voting

Discussion: Other information like the number of frames or packets transmitted or received at various logical layers may be useful, but is dependent on the wireless technology used.

6.0.4.1.4.1 All software used to install voting systems shall be received from the voting system vendor, an EAC-accredited test authority, or voting officials.

Responsible Entity: voting officials
Process: pre-voting

6.0.4.2.2 Jurisdictions may use the NSRL or other EAC-named repository for jurisdiction-specific voting software that is not part of a qualified voting system.

Responsible Entity: voting officials
Process: pre-voting

6.0.4.2.3.1 All write once Reference Information media that do not have a digital signature covering its contents shall be stored in a secure container (such as a safe) when not being used.

Responsible Entity: voting officials
Process: pre-voting

6.0.4.3.2.1.3 Prior to an election voting officials shall query the voting system to determine the values for all the static registers and variables; shall compare these to the vendor documented initial starting values and shall document their findings.

Responsible Entity: voting officials
Process: pre-voting

6.0.4.3.2.1.4 Any anomalies shall be analyzed and resolved before the election.

Responsible Entity: voting officials
Process: pre-voting

6.0.4.3.3.1.1 Voting officials shall document the results of the software verification performed on the voting system including at a minimum: a unique identifier (such as a serial number) for the documentation, the date, time, results, location of verification, time, the list of software verified, name of the people that performed the verification, verification technique used, source of reference information, identifying information of media with reference information (if appropriate), and unique identifiers of the voting systems inspected.

Responsible Entity: voting officials
Process: pre-voting

6.0.4.3.3.1.2 Any anomalies shall be analyzed and resolved before the election.

Responsible Entity: voting officials
Process: pre-voting